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271 INDUCTION OF OVULATION IN RABBIT DOES USING PURIFIED NERVE GROWTH FACTOR AND CAMEL SEMINAL PLASMA

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Abstract

The presence of an ovulation-inducing factor (OIF) in the seminal plasma (SP) of several species with spontaneous and induced ovulation, including the rabbit, has been documented. Recent studies have demonstrated that the OIF in the SP of camels (SPCAM) is a nerve growth factor (β-NGF). The aim of this study was to determine if purified β-NGF from mouse submandibular glands or SPCAM could provoke ovulation induction in the rabbit doe. A total of 35 females were synchronized with 25 IU of equine chorionic gonadotropin (Serigan, Laboratorios Ovejero, Spain) and allocated into 4 groups. Forty-eight hours later (Day 0), does were given a single dose (IM) of 1 mL of saline solution (SS; $n = 8$); 1 mL of gonadorelin (GnRH; Inducel, Laboratorios Ovejero, Spain; $n = 9$); 24 μg of β-NGF (2.5S-NGF; Promega, USA; $n = 10$); or 1 mL of centrifuged raw camel SP (SPCAM; 127 pg mL^{-1} NGF; $n = 8$). After treatment, an empty catheter was introduced through the vagina to simulate the nervous/mechanical stimulus of coitus (4 animals per group). Plasma LH concentrations were determined in blood samples taken 30 min before treatment and at 0, 30, 60, 90, and 120 min after injection. Progesterone concentrations were assessed at 0 and 120 min and every 2 days until Day 6 after treatment. Concentrations of β-NGF in camel SP and hormone determinations were made by enzyme immunoassay. Ovulation rate (OR) was determined after euthanasia on Day 7. Statistical analyses using CATMOD and MIXED procedures of the SAS program to compare OR data and hormone concentrations, respectively, were performed. Ovulation occurred in 100% of GnRH (9/9), 33% (3/10) of NGF, 25% (2/8) of SS, and 0% (0/8) of SPCAM groups. Both NGF and SS ovulated females had significantly lower LH concentration than GnRH group throughout all preovulatory surge ($P < 0.001$). When does were not stimulated with catheter introduction, only those from the GnRH (5/5) and NGF (1/6) groups ovulated. Total number of corpora lutea in ovulated does was similar (15.9 ± 1.9, 17.0 ± 4.2, and 14.3 ± 3.1 CL in GnRH, SS, and NGF groups, respectively). Plasma P_4 concentrations were normally increased from Day 2 to 6 in ovulated rabbits of all groups, but were lower at 120 min ($P < 0.001$) for the NGF and SS does, reaching similar levels than GnRH does at 6 days post-treatment. In the present study, β-NGF from mouse submandibular glands, but not from raw camel SP, induced ovulation in rabbit females, independently of nervous stimulus. Nonetheless, the possible low dose of β-NGF used and the origin could have been responsible for the lack of a more acute effect.

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